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This year the School of Business Administration is 50 years old. But we do not think of such a half-century of life as merely an act of survival; rather it is for us 50 years of long and fruitful growth, years which will be our resource, our strength of experience, for dealing with new challenges in the many years ahead of us.

The upheaval in schools throughout the country and the world indicate clearly enough that no university, as well as no division within a university, can stop its growth and simply rest upon what it has already done. The past, with all of its struggles and distinctions, is over; the now and the next-to-be are the proper concern of any intellectual community.

And a center for an intellectual community is exactly what the modern university has become—a center for technical and creative growth in the society which surrounds it. Such is the School of Business Administration's understanding of itself and its function within the state, upon this proud year of its Golden Anniversary. As a recent article in FORTUNE points out, knowledge, not power, is central to our civilization, and the university "symbolically represents the whole knowledge-based society." The old image of the university as a place for educating a few select people has almost vanished, and the university as a shareholder of knowledge and intellect within society has come into being.

The MONTANA BUSINESS QUARTERLY is a part of the vigorous activity in the School of Business Administration—a part of its past and its future growth. The QUARTERLY not only reports upon the results of research in many areas but also provides a forum for testing new ideas before the public. We have celebrated the occasion of our Anniversary, as it were, by changing the format and design of our publication, in the interest of simplicity as well as good looks; but the basic philosophy, the dedication to continuing education remains the same.

We hope that our subscribers approve of our new Winter QUARTERLY, both in its new dress and in its fresh content. We would appreciate criticism and comment, good or bad, which might help us to make this publication even more effective in its service to the citizens and businesses of our state.

In This Issue

From The
Director's Desk . . .

The Changing Winds of Montana

K. ROSS TOOLE

That the winds are changing in Montana may be debatable. Personally, I think they are—but I am an historian and I would be the first to admit that my definition of change may not be yours. The matter is relative; something like the old saw about the man who asks an acquaintance, "How is your wife?"—only to receive the answer, "Compared to what?"

But even if the matter of change is comparative, let me speculate about it for a moment, in the kind of isolation that historians are sometimes too prone to create, and with apologies to the economists who read this—and with further apologies to any historians who may be about—because historians aren't supposed to speculate, especially about the future.

Any discussion of changing winds in Montana, for me at least, has to be based on the contention that we are on the "hither edge" of change, not yet caught up in the middle of it, not yet deeply involved; not yet, indeed, committed. And that, really is the core of this essay.

I am not really interested in the projections of the United States Census which show relatively little growth in population in this state in the foreseeable future. I don't think it would take much penetrating economic analysis and projection to illustrate that in relative terms there is nothing on Montana's horizon which will very quickly produce: 1) a broader tax base, 2) a much wider diversification of our economy, or 3) "boom" conditions in any real sense of the word.

Yet I do believe that we are on this "hither edge," and that statistical projections notwithstanding, we are confronted, right now, with basic kinds of decisions of great moment to our future. I believe that if we do not make these decisions wisely on the basis of the long-run rather than the short-run, we can mortgage the future, dissipate waste, and profligately spend what we ought to save and harbor.

Montana was conditioned by (was the victim of, if you wish to put it that way) several combining factors that held it tight in the embrace of circumstance:

1) It was remote—far to the north of the east-west axis of trade and commerce that tied western growth to eastern. The coming of the railroads did not alter this geographic fact. Distance represented cost in 1860; it represented cost in 1900; it represents cost today.

2) Montana was rich in raw materials: metals, timber, grass (which made beef), wool, oil. But its distance from the channels of trade meant that it could not fabricate, which meant that as early as 1870 its economy was already clearly colonial, with marked absentee ownership and

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a widening gap between wealth produced and wealth kept in the state.

3) Montana's raw-materials "boom" occurred just when the trust was emerging as the dominant device on the American economic scene for the exploitation of resources and the feeding of the hungry industrial factories of America. Montana got caught in the system—and remained there long after the trust, in its early and classical forms, had passed essentially from the American scene.

So, as of 1900, three-quarters of all the wage-earners of Montana were dependent on the Anaconda Company which continued to keep enormous economic and political control over state and local affairs for more than half a century.

4) The argument from 1903 to the 1950's was not whether Anaconda ran the state (with their ownership of most of the daily press and their tight control of the legislature), but whether they ran it well or poorly. Quite obviously, they often ran it well, if conservatively. The point to note is that Montanans literally did not develop certain root skills in the arts of planning and self-government because in many essential respects they were not self-governing; they did not make many basic decisions.

5) The legislature, grossly malapportioned by the time of the 1940's, operated on a locked-in system dating to 1900. It had resisted the progressive movement that swept America in the first fifteen years of the new century, a movement largely related to reforms in state and local government; it had resisted reapportionment, tax reform; it had resisted interim studies, planning of any sort; it had resisted constitutional reform, judicial reform; it had held grimly to its budgetary control over the cities; in short, it had changed not at all between 1900 and 1950.

Now none of these five factors was conducive to change; none of them led to a salubrious climate for increased population or diversification of the economy in the state. If it were all to be boiled down into one oversimplication, one might say that most of our ills were due to *the high cost of space*—geographical, not outer space; and only Anconda could really surmount that cost—and then only because of the fabulousness of the raw wealth.

Over and over again, from the early days of settlement to recent years, Montana's businessmen, ranchers, and farmers have cursed distance and space.

How very odd that what has so long been our curse, now bids fair to be our greatest blessing! How very ironic and bitter it would be if we fail to understand that simple fact and turn the blessing back into a curse.

I am less interested in the changing winds of Montana than I am in the winds of America that are blowing across the face of Montana. For America has run out of space; it is fast running out of pure water, pure air; it is running out of distances, wilderness, trees; it is running out of places where the sky comes down the same distance all around; it is running out of lakes and fish and game; it is running out of beauty. America has fouled its own nest—nearly all of it.

Oh, come now, you say—it isn't that bad. No, not yet. But if there is merit in examining fifty years into Montana's past to make a few germane comments about the present; it may be wise to try to peer fifty years into its future. And somewhere along in there, what we do today is going to blueprint indelibly what we are then.

We are, surprisingly, in rather good shape to make some basic decisions now—or soon. Maybe such a realization indeed can help change the shape of things to come. Since 1950, these things have occurred:

The Anaconda Company no longer exerts a control in the state much beyond the legitimate influence it should have, as a business with heavy investments in the state. It has sold its newspapers; its control of the legislature has diminished swiftly. The legislature has been reapportioned. While the first reapportioned session two years ago disappointed many people who anticipated radical departures from old ways, no one who followed the sessions of the old and then the reapportioned performance has reason to be other than hopeful.

Interim studies are now permissible; state planning has been accepted as a function of government.

Moreover, Montanans are now agitatedly debating and reading about basic problems: air and water pollution; preservation versus conservation versus multiple use. The press is still

often criticized for apathetic journalism. But no one who remembers anything about the newspapers Montana had formerly can be other than relieved and hopeful that we have emerged from the dark night of the press's captivity—because the press is terribly important to change.

These are important changes—because they mark basic departures from the old rigidity, the locked-in system that gripped the state prior to 1950. There is nothing revolutionary about them—and, of course, people not interested in history and many under 35 years of age aren't even aware that these changes have come about. But they have occurred—and they matter. They matter because in concert they free us to study what we are, what we have, and what we want to become. They free us to plan.

But how easy that is to say—and how hard it is to do! To do well! And how perilous it is to do it poorly!

It takes temerity to say this to an audience peppered with planners, but let me suggest this to the nonplanners, since I am sure the planners already know it: One of the last places in America where final commitments have not been made with respect to natural resources, the eco-system, the water, trees, and wilderness areas, the land—is the Northern Rocky Mountain region and the Northern Great Plains.

Montana sits astride this area, dead center and involved, but not up to the hilt. Right now, controversy embroils some of us concerning water pollution, air pollution, game management practices, preservation versus conservation versus multiple use, water management, timber management, etc., etc., etc. It should involve all of us.

These controversies take place in the context of rapidly altering national attitudes toward space, water, wilderness, game, recreation, and also in the context of the rather old conflict between private enterprise and public welfare.

The legislature will be increasingly bombarded with bills concerning Montana's resources—most of them carrying the banners of emotional partisans, many involving conflicting interests, many using discrepant statistics, rumor, and misinformation.

How then shall the planner plan? Can he avoid embroilment as a partisan? What basic philosophy can he employ so that he does not mortgage the future for profit in the present? Recognizing that the state needs to grow and prosper and that the private sector is the key to growth and prosperity, what regulations should the planner recommend so that today's private sector does not rob tomorrow's? What of fifty years from now?

There are a hundred such rhetorical questions which would merely reinforce the contention that the planner had better plan broadly and for the long-run, not narrowly and for the short-run.

In 1955 and 1956 the State Planning Board energetically sought to bring pulp mills into Montana on the basis of the fact that the industry would tie in beautifully with existent lumber mills and stabilize the lumber industry. It believed, on the basis of information copiously provided by the pulp industry itself, that modern pulp plants caused no appreciable amount of stream or air pollution. It seemed an admirable plan in 1955 and 1956. Pulp mills needed vast quantities of waste wood material which western Montana could supply in abundance. Pulp mills needed vast quantities of pure water which western Montana could supply in abundance. Western Montana needed new industry, more people, which pulp mills could supply. It was clear at the first hearing that plans called for more mills in due course and that "if a pulp mill locates near Missoula it will be the first of several."

So the bargain was struck. Recently a suit was filed in federal court in the 9th Judicial District, on behalf of certain citizens of Missoula, by the Environmental Defense Fund of New York asking for an injunction against Waldorf-Hoerner Corporation for severe degredation of the eco-system of the Missoula area, alleging that sulphurous compounds emitted by the Missoula plant are poisonous to plants and to man. From 1957, when the plant was completed to this day, the presence of the pulp mill has caused furious opposition in the Missoula area; it has aroused unparalled public agitation; it has led to furious legislative battles and to reams of proposed legislation and countless hours of hearings and pounds of emotional testimony.

Was the plan of the Planning Board in 1956 a good plan? Well, the mill did stabilize Missoula's lumber industry; it did contribute materially to the economy of Missoula. But was it a good plan? Perhaps the acid test might be to

speculate on what would happen if another mill did now propose to locate near Missoula. I honestly think the people would take up arms to prevent it. And nothing is more abiding, whether correct or incorrect, in the nature of opposition to the pulp mill, than the deep-seated conviction that pollution of air and water constitutes the destruction of the most precious commodity we in Montana have: air, water, gorgeous countryside, and a big sky.

What is the answer then, for the planners? I must now answer my own rhetorical questions and assert that I think there is a way to steer through the confusion and emotion, to plan well and rationally.

1) We need information, facts, about our resources. We need nonpartisan, unemotional facts, numbers, values and statistics. Above all, in this regard, we need to use the computer, without which the task is impossible—because the facts must be counted, interrelated, immediately available—because the natural, physical and social sciences must be coordinated—because the essence of what I am talking about is information retrieval. Without these facts—and without their computerization—no one, is going to plan wisely or well. If that makes too much of a God of the computer, so be it—I, for one, will happily worship at that altar.

2) We need to regard our natural resources as renewable assets. We must not spend the principal, only the interest. The planner is the custodian of the property of the fifth generation unborn. He must plan for the long-run, not for the short. His task is not to bring industry, as such, into Montana next year, but to think about what will attract the *right kind* of industry to Montana in an America sick and tired of the megalopolis ten years from now.

3) We need to stop bidding in a buyer's market and coolly wait for the seller's market. We will have, if we are careful, something terribly valuable to sell. I know you have been waiting for me to answer the question: How do you convert space, beauty, lakes, trees, into dollars? Aside from a perhaps much overrated tourist industry, how, precisely, do you convert these things into money?

I simply submit that the flight, industrial as well as personal, from decaying urban areas is going inexorably to continue and that it *will* affect us; that if we are ready we can fit it into our scheme of things—if we are not, we cannot.

I think there is abundant evidence that the industrial flight is permanent, that neither urban renewal nor any other national, state, or local device will stop it. You see it with startling effect to the south of us—in Colorado: Greeley, Boulder, Fort Collins. You see it, indeed, all over the Mountain West. Not here yet. But wait. It will move north because it has to.

Not steel plants, not heavy industry and, pray to the Lord, not pulp mills. But small industries, light industries, clean enterprises.

So I simply submit that what has been our curse is rapidly becoming our blessing—if only we recognize it in time; if only we recognize that what we have, and are, will very soon be what they want.

In the meantime, we should not merely sit and wait. Planning presently underway in our universities should be accelerated. The State Planning Board should be fully supported with a realistic appropriation and the knowledgeable endorsement of the state administration. Economists, political scientists, and researchers and scholars in the natural sciences should be aggressively encouraged to turn their attention increasingly to the problems of the state and to the interrelationships of the natural and social sciences in the process of charting Montana's course for the next generation. No opportunity to avail ourselves of federal funds to subsidize these studies should be lost. And before long, all those involved in these endeavors should consider the problem of coordination. The left hand simply must know what the right is doing.

Beyond that, I have only one adjuration. In the last analysis, planning on whatever level can only be translated into change and progress by a political process. There must be no vacuum, no breakdown in communication between the scholars and administrators, between the planners and the executive and legislative branches of government.

All this constitutes a task of magnitude and the time is short, but Montana has the talent if it can find the will. The long term rewards are nearly incalculable. The consequences of failing to pursue the task are grim to contemplate.

DONALD J. EMBLEN
GEORGE J. BRABB

Fifty Years of Progress

The Story of the School of Business Administration, University of Montana

It was the spring of 1918—toward the end of World War I—and three faculty members housed in the basement of Main Hall on the University of Montana campus were jubilant. Just four years earlier a "Department of Commerce" had been organized within the Department of Economics. After two years (in 1916) it had been elevated to independent status within the College of Arts and Sciences as a separate Department of Business Administration. But, in 1918 came the biggest step of all; with the start of classes in the fall, these three faculty members were to be registering their own students in a school of business administration.

From that small beginning with three faculty and about 25 students, the School of Business Administration has grown into the largest professional school at the University of Montana. Twenty-four full-time resident faculty, assisted by four part-time faculty and seven graduate teaching assistants, offer courses for over 1,000 students—graduate as well as undergraduate. The Associated Bureau of Business and Economic Research uses three of the 24 teaching faculty plus three other individuals of faculty rank to perform research to benefit government agencies, business firms, and private citizens of the State of Montana. The Bureau also employs two full-time research assistants and three graduate student assistants.

At commencement exercises in June 1968, 185 students (15 percent of the 1,180 receiving degrees from the University) received a Business Administration degree.

In addition to teaching and research activities on the campus, the school is responsible for an educational program for 78 Air Force Officers who are working for a Master of Business Administration degree in a program at Malmstrom Air Force Base in Great Falls. Four additional faculty members are currently stationed in Great Falls to staff that program.

Today's students of business are well-motivated, hard-working and intelligent. They deserve a well-balanced, well-thought-out educational program which recognizes and reflects the importance of all elements necessary for the effective management of modern business organizations. Such a program has evolved and is continually developing at the School of Business Administration at the University of Montana. The history of the school over its first fifty years is a story of progress in this direction.

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Early History

Shirley J. Coon, an economist, was the first Dean of the School of Business Administration. The years under the leadership of Dean Coon were a period of struggle to obtain an identity for the School of Business Administration. With only two or three full-time faculty members, course offerings were severely limited. The initial curriculum for students in business relied heavily on courses offered by the Department of Economics and other departments of the University. The size of the business faculty limited the number of courses that could be offered which today would be thought of as "business" courses. The "business" courses were largely vocationally oriented and included courses in credit and collections, typewriting, and accounting. Although the number of business courses has increased substantially over the years, students have continually gone outside the school for more than half of the courses required for a degree in business. This division reflects the necessity for a broad basic education so that students can adapt successfully to the changing environment of the business world.

After eight years at the University of Montana, Dean Coon resigned to accept a position at the University of Washington where he subsequently became Dean of the School of Business Administration at that university. Robert C. Line, a former member of the State Board of Education, became the second Dean of the School of Business Administration in 1927. Under Dean Line's leadership, the School continued to grow except for a temporary setback during World War II when students and faculty were lost to the Armed Forces.

During the tenure of Dean Line (1927-1946), the Bureau of Business and Economic Research was established, with an initial appropriation of $100 a year. The curriculum became more profesionally oriented with a strong emphasis on accounting. Accounting remains the largest major in the School today, attracting slightly over one-fourth of the undergraduate students.

Scarcity of funds has been a continuing problem for the School of Business. Even though the number of students majoring in business increased substantially during the early years of the School, the number of full-time faculty did not exceed four in number until 1945. The problem of staffing was so acute in 1929 that a registration fee of $412.50 per quarter was charged for courses in secretarial science with the revenue going to the instructor as salary. When only 30 students registered, the instructor became discouraged with the remuneration and resigned. The following year an appropriation was obtained sufficient to hire an instructor on a regular salary basis for secretarial science courses.

Dean Line resigned as administrative head of the School of Business in 1946, but continued to serve the School for several more years as Professor of Business Administration. Theodore H. Smith, a marketing specialist, succeeded Dean Line and provided leadership for the School for the next 12 years. Under Dean Smith the School of Business made significant strides forward; the faculty increased to 15 full-time instructors, half of whom held a doctoral degree. A full-time director of the Bureau of Business and Economic Research was appointed in 1948 and the School became a member of the American Association of Collegiate Schools of Business in 1949.

During the 1950's the Bureau of Business and Economic Research continued to expand its research and service activities, and the School curriculum continued to reflect a professional emphasis and a concentration on accounting. Toward the end of this period, however, an increasing emphasis on decision-making began to be apparent.

Dean Smith left in 1958 to assume leadership of the Air Force School of Business Administration at Wright-Patterson Air Force Base. After one year without a permanent dean, but with Professor Albert Helbing serving in an acting capacity, Paul B. Blomgren was appointed dean in July of 1959. Dean Blomgren, whose specialty was transportation, led the School of Business Administration into a period of external involvement. Greater participation of the School in the business and economic affairs of the state helped to enhance the School's image as a positive force in the state's development. Meanwhile, the educational trends established earlier continued during Dean Blomgren's tenure in office. The curriculum continued to evolve toward greater emphasis on decision-making, but the emphasis on accounting training remained strong. Dean Blomgren left Montana in the summer of 1964 to take over the

leadership of the School of Business Administration at San Fernando State College in California.

When James L. Athearn became the School's fifth dean in 1964, the full-time faculty totaled 17. Statewide service to the business community was emphasized during Dean Athearn's administration, especially in the areas of real estate and insurance, the areas of his specialization. For administrative ease, Dean Athearn created four departments within the School of Business Administration: Accounting, Management, Business Education and Office Administration, and the Bureau of Business and Economic Research. Dean Athearn resigned in 1967 to accept a position as professor of insurance at the University of South Carolina and Donald J. Emblen was appointed Acting Dean.

The importance of modern training for management has continued to expand. Courses such as business policy, business organization, quantitative analysis, human relations and electronic data processing, all courses which emphasize organizational and decision-making skills, have been given increasing importance in the program.

Modern Education for Business

The basic philosophy underlying our program of education for business at the University of Montana recognizes that the world continually changes, and consequently the business program is subject to frequent changes to assure that it is meeting the current needs of the students. We have already mentioned that the students use the first two years to build up a wide spectrum of knowledge from courses outside the School of Business. Courses in the social and behavioral sciences provide a basis for developing the students' ability to understand and work with other people. Study in mathematics and the behavioral sciences provides the student with basic skills for use in the analysis of business problems. The nonbusiness courses as a whole give the student an expanded awareness of the world about him.

The last two years of undergraduate study provide for a concentration of study in business courses. The program of the School of Business Administration is designed to develop a person's capability to set goals and objectives which imply progress. Students learn that these goals must reflect an awareness of social responsibility and the rights and aspirations of the other human beings who will be affected. The modern business student is not only taught to develop realistic, responsible goals and objectives, but he also learns how to work effectively to realize those goals. He is introduced to a modern management science which is a mixture of computerized quantitative skills and the psychological and sociological skills of effective human relations. The successful businessman of the future must be capable of analyzing the systems within which he operates so that he can perceive their significant elements. He must then be able to motivate and lead his organization to manipulate these key elements so as to move toward properly defined goals and objectives. He must be a problem solver; a decision maker.

In order to accomplish these objectives each undergraduate student must complete a core of courses in the School of Business Administration. The courses are distributed among the following academic disciplines: Accounting, Management (including Human and Personal Relations), Quantitative Analysis and Computers, Finance, and Marketing.

In addition to core courses, the student selects an area of concentration in which he specializes in one of the following fields: accounting, finance, management, marketing, computer systems, business education and office administration.

The Graduate Program

During its fifty years of existence the School of Business has emphasized its undergraduate program. Significant activity in graduate education has only recently begun to emerge. While most other accredited Schools of Business in the country were developing successful graduate programs, the School of Business Administration at the University of Montana was suffering from a lack of resources for the proper development of a quality graduate program. A Master of Science degree in Business Administration had been authorized as early as 1922, but, due to the lack of money to develop the necessary graduate courses, progress was slow. Finally, all graduate education was suspended in 1950. Under Dean Blomgren the School reactivated its MS program but continued to be hampered by the lack of adequate financing. The importance

of a strong graduate program had long been recognized, but not until 1965 was authority granted to the School of Business Administration to offer the degree of Master of Business Administration. Progress since then has been more rapid.

There are 76 graduate students currently active in the MBA program, exclusive of the 78 at Malmstrom Air Force Base. The breadth of the program is indicated by the 25 separate courses available only to graduate students, in addition to three informal seminars in each general area of concentration—Accounting, Finance, Marketing, Management, and Business Education and Office Administration. In 1968, an area of concentration in computer systems for business was established.

Graduate students who wish to specialize in a particular field usually elect the MS program. For the most part these are students whose undergraduate education was in business. Students who wish a broader management-oriented graduate education elect the MBA program. This latter program is not designed to provide intensive specialization and is attractive to students whose undergraduate backgrounds are in areas other than business.

The year 1968 witnessed the establishment of the MBA program at Malmstrom Air Force Base in Great Falls. It is the same program that is given on the University campus but is offered in cooperation with the Air Force Institute of Technology. Only Air Force Launch Control Officers are eligible for this program, and at the present time there are 78 students enrolled. It is expected that nearly 150 officers will ultimately participate in the program.

Further impetus has been given the graduate program this year by an Experienced Teacher Fellowship Program in Business Education. This is a federally financed program designed to provide Business Education teachers in secondary schools with an understanding of computer technology and its application to business situations. Twenty-two high school teachers from all over the United States are currently enrolled in the program and are taking courses leading to the MS in Business Education. After completing the program, each fellow must return to the school where he was employed prior to entering the program and actively participate in the development of computer education in his school. In addition he will be equipped to assist his school administrators in the establishment of a computer-based information system.

The Bureau of Business and Economic Research is engaged in the first year of a three-year economic base study for Montana. The economic study is the first in a series of research projects designed by the Bureau to provide information for state planning. The Department of Housing and Urban Development provided two-thirds of the cost of the project this year. The Bureau also provides information to Montana businessmen through the State Technical Services program. This program, which is 50 percent federally financed, enables Montana businessmen to become acquainted with the latest technology through workshops and reference and field services. Under the Bureau's direction, School of Business faculty have an opportunity to build a stronger relationship with Montana's business community.

During the current year the faculty of the School of Business Administration are working to develop a stronger relationship with the business community in the state. A series of public lectures by recognized authorities is underway. These lectures on the topics of business and science are supported by a grant from the S & H Foundation, sponsored by the Sperry and Hutchinson Co. Additional support is being received from the Missoula Chamber of Commerce. (This lecture series was fully described in the fall issue of this Quarterly.) In addition to the Business and Science Lecture Series, a series of campus visits by successful businessmen is planned. A speakers bureau to provide faculty as speakers on business topics for service clubs and other organizations is also being developed.

A closer relationship with the alumni of the School is being promoted. At this writing, the first in a regular series of newsletters to alumni is being drafted. These newsletters will keep the alumni informed of the School's progress and of its problems. School events of possible interest to the business community will be announced. Any alumni who have not received a copy of the Business School Newsletter by February 1, are urged to write so they can be put on the mailing list.

At the end of the 1968-69 school year the fiftieth birthday of the School is to be recognized by a Golden Anniversary Celebration on

May 23 and 24. Activities planned include an open house at the School of Business on both Friday and Saturday. Interested persons are invited to visit actual classes on Friday, May 23, and to view displays prepared by the students which will be on exhibit in the Business School building. A lecture by a successful businessman will be featured in the afternoon of May 24, and Saturday evening will be devoted to a reception and banquet featuring entertainment and good fellowship.

Future Prospects

The School of Business Administration at the University of Montana has proved a dynamic, progressive institution, but progress is not without its problems. The school has literally outgrown its facilities. A total of six full-time professional faculty members, four graduate student assistants, and several part-time office workers were added this year. Student enrollment expanded and teaching loads have reached unbearable sizes in some areas. Facilities for education in computer use are strained. The school has been able to meet its increased loads at present only because of resources provided from special research and educational projects funded from outside sources. It can be expected that the number and size of such projects will continue to grow, particularly if proper conditions are provided. The proper conditions are adequate facilities and an expanding faculty of qualified persons.

One problem faced by the School since the fall of 1967 is soon to be resolved. A permanent dean has been selected and will assume his duties on July 1, 1969. A lengthy and sometimes frustrating search has found a capable, energetic, and well-qualified individual. Dr. Rudyard Goode comes to us from the University of Missouri where he has been Professor of Finance and Program Director for Administration in the Research Center.

The School of Business Administration has made great progress in its first fifty years. We are confident that even greater progress will be made in the years to come. The School will continue to expand and improve its educational programs and its other services to the citizens of Montana. Cooperation between the Montana business community and the School can overcome present deficiencies in teaching facilities, office space, and financial resources. The faculty of the School earnestly solicit your support for an active participation in this continuing program for progress. Our combined efforts can make a good school better.

PATRICIA P. DOUGLAS

The Challenge of Today's Stock Market

Knowledge of market determinants should precede sound investment decisions

Publications such as *How I Made $2,000,000 in the Stock Market, How to Make Profits,* and *Wall Street: The Other Las Vegas,* make fascinating reading but unfortunately they also suggest that a fortune can be made in the stock market with very little capital, no experience and a good rule of thumb. The fact that there are millions of frustrated investors for every success story should reveal that, although success may have come easily in some isolated cases, investing in the stock market is a complex and time-consuming task.

Even though they tell us fortunes have been made by throwing darts at the wall, tossing dice, buying and selling on three-point price moves, and by charting, the average investor faces the problem of absorbing a multitude of facts, differing opinions, and a constantly changing market environment. This article will examine some of the changes which are developing in the investment environment and the resulting impact on investors.

Market Determinants

Investor psychology, international crises and changes or acts of government, business and labor decisions all have been instrumental in determining stock prices at various times. However, within the past few years the characteristics of these determinants have begun to change.

One such change is the growing internationalism of American companies. It has been aptly pointed out that U.S. companies are creating a third economy in the markets abroad. After the U.S. domestic economy, the Soviet economy, the next rank in order of magnitude is U.S. business abroad. To understand the significance of U.S. investment abroad one should note that since 1950 it has been growing at a rate of 10 percent per year.[1] During 1965 alone American firms invested $4 billion in Europe,[2] and it is estimated that annual sales to world markets from the foreign plants of U.S. companies amount to $110 billion or about four times the value of American exports delivered to those markets.[3] These facts and others which could be cited have definite implications for our own investment climate. Balance of payments problems, political turmoil and foreign crises still offset the market, but the investment world of today and tomorrow has become an international one. Any major U.S. corporation which confines its operations

[1]John J. Powers, "The Impact of U.S. Controls on Foreign Investment." An address delivered at an American Management Association special briefing, New York City, April 10, 1968.

[2]J. J. Servan-Schreiber, *The American Challenge* (New York: Atheneum, 1968), p. 14.

[3]*Op. cit.*, Powers.

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and planning to this continent is bound to suffer a severe competitive handicap.

Recent articles on the topic of global operations—*Fortune* refers to this as "multinationalism"—all predict that the future of U.S. industry lies in its international operations. A *Fortune* reporter sums it up this way:

> . . . companies are learning that there are special advantages to be gained by going multinational. When it operates in many different markets with varying labor conditions, market demands, money-market rates, tax laws, etc., the corporation finds multiplying opportunities to buy cheap and sell dear, provided that it can closely coordinate all parts of its operations. Multinational operation sometimes opens up unexpected markets too.[4]

A second "new" force revolves around the importance given research by corporate management. There were 744,000 scientists and engineers in the U.S. in 1950, over 1 million in 1960, and those in the know anticipate 3,500,000 by the year 2,000.[5] An increasing number of these scientists are taking jobs with private industry. In fact, during the last two decades the number of scientists and engineers attracted to industry has proceeded at rates even higher than those covering the growth in their total number. This influx is a reflection of the great emphasis given by modern corporate executives to research and development. The demands generated by national defense considerations and the profitability and viability of business today are increasingly recognized as dependent upon the march of new products and processes out of the thousands of research and development laboratories, both large and small.

The sophistication of corporate management and the resulting emphasis on research and development have had a tremendous impact on both the costs of products and on the rapidity with which they are being developed. For example, in launching the third generation of computers, the famous 360 series, IBM spent over five billion dollars during a four-year period. Or as a different kind of example, consider the reduced time lag from the moment of scientific invention until the manufacture of a marketable product for the following: 112 years for photography; 15 years for radar; 5 years for the transistor; and only 3 years for the integrated circuit.

With the rapid advances in technology, with the acceleration of education, communication, and transportation, only those firms capable of developing and maintaining their technological leadership will continue to grow. In other words the future of tomorrow's industry lies in its talent for accepting and mastering innovation. The acceptance and mastery of change is in turn dependent upon the dynamic vigor of management. Companies like IBM have accepted the challenge and are prepared to spend billions trying to master just one phase of it.

The partnership between government and private industry is another significant force behind today's market. Federal outlays for research and development have risen from $3 billion a year to $16 billion a year in the last ten years.[6] Of that total, almost $9 billion or 56 percent is awarded to private industry for research and development projects.[7] From another perspective, the federal government contributed over 90 percent ($3.5 billion) of the $4 billion spent on aviation and space research last year. Similarly, the federal government sponsored 65 percent of the $2 billion spent on electrical and electronic research.[8]

Projects involving major technological innovations—like the space effort, satellite communication and so on—are too large to be accomplished by individual companies and, for that matter, too large for the private sector to assume primary responsibility for; thus, the Federal Government is playing an increasingly important role in private industry. This suggests, at least to the author, that the companies which avoid the government-private partnership will probably be declining ones. One thing is certain: those companies maintaining a hands-off policy in regard to government research monies will require considerable vitality in other areas to sustain their current competitive position.

[4]Sanford Rose, "The Rewarding Strategies of Multinationalism," *Fortune*, September 15, 1968, p. 101.

[5]Jay M. Gould, *The Technical Elite*, Augustus M. Kelley (New York: 1966), p. 121.

[6]Spencer Klaw, "The Nationalization of U.S. Science," *Fortune*, September 1964, p. 158.

[7]National Science Foundation, *Federal Funds for Research Development and Other Scientific Activities* (U.S. Printing Office: 1967), p. 100.

[8]*Op. cit.*, Klaw, p. 157.

Two other changes contribute to the complexity of today's market: first, corporate mergers activity which, far from being a fad, set a record during the first six months of last year when there were 1,700 corporate consolidations, up 20 percent from the first six months of 1967.[9] Conglomerates, or multimarket companies as they are sometimes called, are probably the most significant business phenomenon of the postwar era. Their importance can be gauged by the fact that up until 15 years ago the bulk of mergers was either "horizontal" (into identical or complementary products) or "vertical" (into the products of suppliers and customers). But according to Federal Trade Commission figures, no less than 70 percent of all important mergers and acquisitions between 1960 and 1965 were conglomerate or multimarket and only 30 percent were horizontal or vertical.[10] This wave of merger activity makes it very difficult for the average investor to determine the industry identification of a particular company, let alone compare that company with others in the same industry.

A second domestic change which affects the market is the growing number of investors, especially the increasing number of institutional investors. There are approximately 24 million direct investors in this country, that is, people who have actually purchased shares in specific companies.[11] Not all of these investors are active, but the number is growing all the time, making the stock market a national pastime. And though it would be difficult to measure the total number of institutional investors (pension funds, insurance companies, mutual funds and so forth), their power is exemplified by the fact that mutual fund net assets stood at a mere $450 million just 25 years ago.[12] Today they are 100 times that great; they now amount to $45 million.[13] Furthermore, the trust departments of five leading banks alone control $20 billion worth of stock.[14] In short, we are no longer operating in a world where companies can be identified by industry, categories, nor where only the financial wizards, a few large corporations, and the well-to-do private citizen who can afford an investment counselor are active in the stock market. Now Tom, Dick, and his cousin Harry are all trying to make a fast buck in the market. In the new leisure affluence provides, we find many investors confiding that they are playing the market, not to realize a profit, but to enjoy the "fun of it all." Given these new market forces, how can the unsophisticated investor hope to make a profit?

Investment Practices

The market determinants referred to above—internationalism, technological advances, government involvement, and conglomerate mergers and the impact of institutional investors—should be vital considerations when one selects an industry or a particular stock for investment purposes. It is possible to develop some rules based on these market forces: first, investors should give special attention to those companies with international interests. If the growing markets are overseas, companies which at least do not shut their doors on expansion abroad will probably experience more growth than those operating solely within the United States.

Secondly, with technology changing so rapidly, and considering the potential growth from technological breakthroughs, investors should be aware of important innovations and, correspondingly, the companies which are likely to benefit from them. This is not meant to imply that investors should judge a company by the number of new products it introduces in any one month or year, but they should evaluate management's future plans. A good indicator is the size of its expenditures on research and development in comparison to gross sales. Today's research and development efforts may well determine tomorrow's growth.

Thirdly, investors should examine trends in government-sponsored projects. There are many problems associated with government contracting; therefore, it should not be the sole criterion in selecting an investment. However, if an investor has some idea of the trends in govern-

[9]Gilbert Burck, "The Perils of the Multi-Market Corporation," *Fortune*, February 1967, p. 131.

[10]*Op. cit.*, Burck, p. 132.

[11]Adam Smith, *The Money Game* (Random House: New York, 1967), p. 11.

[12]"Funds on the Defensive," *Forbes*, August 15, 1967, p. 41.

[13]*Ibid.*, p. 41.

[14]*Ibid.*, p. 41.

ment subsidizing, he will be in a better position to select those industries or companies in which major growth is expected to occur.

Fourthly, the average investor should avoid trying to "out-guess" the market. The impact of institutional investors and the fact that almost every other investor is trying to do the very same thing make any one investor's chances of success pretty slim. The heavy pressure from institutional buying or selling can affect the entire market, especially if the institutions are concentrating their activity in thinly-capitalized issues. For example, last fall Motorola announced that its year-end earnings would not be anywhere near the figure analysts had been predicting. Motorola, with just six-million shares outstanding is a fairly thin stock. When the bad news appeared, huge blocks of Motorola were suddenly offered for sale and there were few takers. Motorola dropped 19 points off the previous day's closing price, and sunk to a low of 105 before the end of the week from a high of 143 at the beginning. In circumstances such as this neither rational decision making nor crowd psychology seem to explain market behavior. As Lord Keynes once said, "Investment based on genuine long-term expectations is so difficult today as to be scarcely practicable. He who attempts it must surely lead much more laborious days and run greater risks than he who tries to guess better than the crowd how the crowd will behave; and given equal intelligence, he may make more disastrous mistakes."

For the investor who finds Mr. Keynes' remarks somewhat disquieting, there are some sound investment practices which have generally proven accurate. First, there are some cautions, and the most important one is attempting to use a broker beyond his capacity. With the exception of some large brokerage firms in the metropolitan areas, people engaged in the brokerage business are typically described by the literal interpretation of their title, buyers and sellers of securities. They are not security analysts and if investors rely on them for analytical work they will probably get exactly what the advice costs: nothing. Frequently, brokers suggest investments on the basis of hearsay, client reactions, and home-office statements. These are definitely poor bases for investment counseling.

Another caution relates closely to the first. As an investor, do not rely on "hot tips" to make your fortune in the market. This applies not only to those tips from friends but also to offers of brokers and so-called stock advisers. Stock advisers, particularly those who offer huge profits merely by subscribing to their advisory services and market reports, are a dime a dozen and the dozen may be worth a little less than a dime!

Serious investors, investment counselors, and the Securities and Exchange Commission are becoming increasingly concerned about this matter of "hot tips" and "huge profits." Recently the S.E.C. cracked down on three investment advisers—including Dow Theory Forecasts—for violating the Commission's advertising regulations. Several months ago the Commission illustrated just how upset it is with misleading advertisements to investors by revoking the registration of Forecast Associates, Inc., putting the firm out of business.

A third and equally important caution: do not use published balance sheets and income statements found in annual reports as a basis for evaluating an individual company. As a source of information about the current status or potential growth of a company, balance sheets and income statements are generally not worth the paper they are printed on. For example, consolidated financial statements are supposed to enable investors to judge the total operations of a company, regardless of the number of facilities and their respective locations. However, because the statements are based on cost, as opposed to current values, and because the rates of inflation vary from country to country, it is extremely difficult even to define net income, let alone place any validity on the numeric value.

Financial statements, even if accurately and consistently stated are too general to use in evaluating a company. If an investor is really interested in a company, he should be able to determine how some new product or management policy is affecting earnings. The author has yet to find an annual report with that much detail.

Furthermore, generally accepted accounting practices permit firms to report the same items in a number of different ways: for example, inventories of manufacturing companies might be reported at cost, lower of cost or market, or some other value. The careful CPA makes the

investor aware of these differences by noting which valuation has been used, but that does not help a great deal when trying to compare one company with another. Investors do not have enough information to convert cost to market or vice versa in order to put the operations of two separate firms on a comparable basis. That is only the beginning of the accounting complications. Identical plant facilities and equipment may be depreciated over different time periods with differing depreciation methods. Even if the same methods are used, say the straight-line method, an equal percentage is not always deducted; some companies use heavy charges at the beginning, from 150 percent to zero. Merger activity has further complicated the accounting process; the acquisition can be a purchase, a pooling of interests, or a combination of the two. Goodwill can be amortized or nor amortized. Putting these differences aside, how does one go about combining the operating results of a dozen or more companies, each in a different industry? Economists have not yet determined what impact these conglomerates have on the economy, and thus far financial experts have found no way of measuring this impact; obviously, then, it is seldom reported to the stockholder.

If we rule out brokers, financial statements, and "hot tips" as sources of information, just where does our average investor begin? The best answer, presuming, of course, that he cannot afford or does not have enough capital to warrant the attention of a reputable investment counselor, is by subscribing to the trade publications: *Fortune; Forbes; The Wall Street Journal;* and *Barrons* are all good sources of information regarding either the forces behind the market or individual company performance. Again, the investor should subscribe to more than one publication—one source is probably no better than the advice of a single broker.

A second source of information, general as it may be, is the president's message which is included in the company's annual report. Generally that statement gives some idea of management's views on federal contracts, research and development, and overseas investment, the very factors mentioned earlier as being important considerations in selecting an investment.

This article earlier pointed out that a company's ability to adapt to and master technological change is indicative of management's quality. The fact that Fairchild Camera varied 30 points over a six-day period last year, apparently because there were rumors of management changes, should also suggest that management is a crucial indicator of a company's current and future potential. Investment counselors and large brokerage firms interview members of management as a regular part of their analysis, but the average investor does not have that opportunity. Yet the investor must make every possible attempt to evaluate management; the management news items found in *The Wall Street Journal* and *Forbes* are a good place to begin. Also, a broker can be helpful in locating other sources of information concerning management changes. These sources are a poor substitute for a personal interview, but there are no other alternatives.

Both as a forewarning to the unwary investor and as a consolation for the investor with excess capital losses on his tax return, we can point to one other factor which frequently determines whether or not an investor is successful. For lack of a better term, that factor could be described as a "feel for the market." Although it is difficult to describe, it is analogous to being a good researcher. Many persons can develop models, can learn the appropriate terminology, sight the facts and report the findings for a research problem, but only a very few have that extra something—call it intellect if you wish—to apply the models, terminology, and facts and report the findings in a truly meaningful manner. Many investors can apply given techniques to the investment field, but only a few can apply them well enough for a success story. The difference is, in the author's opinion, that illusive "feel for the market." A manager of one of the largest mutaul funds expressed the same idea when he remarked:

> " 'I have been absorbed and immersed since 1924 and I know this is no science. It is an art. Now we have computers and all sorts of statistics, but the market is still the same and understanding the market is still no easier. It is personal intuition, sensing patterns of behavior. There is always something unknown, undiscerned.' "[15]

The *prospect* of capital gains and dividends

[15] *Op. cit.*, Smith, p. 20.

which far exceed the average return from normal savings media will continue to attract investors to the market. Each investor, when bitten by the "bug," pays little attention to either the difficulty of obtaining advice or self-researched facts. And he is probably even less concerned about the new factors of change governing price movements. Only during that investment period when both the tax return and the monthly statement prove that actual and paper losses exceed the gains will the cautions and pitfalls receive consideration and, perhaps even then only momentarily, because by that time he is under pressure to prove, to himself above all, that he is more intelligent than the dumb average investor!

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Automobile Liability — A Review

Existing legislation covering automobile liability insurance has not solved major problems

The modern automobile is an instrument of convenience, but it can also be an instrument of destruction. Statistics indicate that the automobile is a major cause of death in Montana and the nation. More than 280 people died on Montana's highways last year, and the U.S. traffic death rate is certain to approximate 55,000 people. Despite the fact that over 4.5 million people were injured last year, these statistics do not begin to illustrate the seriousness of the problem: lost wages, property damages, and medical and insurance costs total more than $7.5 billion each year.

These accidents and the resulting damages do not just happen; they are caused by human neglect. Negligence has long been called a tort, and a tort is a civil wrong; one subjected to a civil wrong may seek financial relief through the courts. The legal name for negligent acts is the *doctrine of fault*, and although the doctrine was prevalent before the automobile, its principles were quickly applied to automobile liability.

The first automobile policy was written in the United States in February, 1898. By the end of that year 200 such policies were in force, even though the automobile itself lacked social acceptability. The president of the Insurance Company of North America, when broached with the subject of insuring automobiles, commented that: "I'll never insure a gasoline can on wheels, the noisy, stinking things."[1] A popular trade journal agreed and even recommended a boycott of automobiles:

> The motormen—chauffeurs, is the general term—driving automobiles are usually reckless, rushing madly past frightened teams without attempting to slow down, or frequently coming up from behind and passing without giving any warning whatever. Nervous horses are sure to be alarmed at such apparitions. . . . While they cannot prevent their policyholders from being run over by reckless chauffeurs . . . (underwriters) might serve the cause of public safety by refusing to insure anyone who has acquired the automobile habit.[2]

Despite these early objections, today over 90 percent of all automobiles and trucks are insured for public liability. But, providing public liability insurance has not solved all the problems; often it is impossible to prove the negligence of a driver, even after court proceedings and legal opinions. In other cases, the negligent party is unable to pay the costs associated with

[1]Marquis James, *Biography of a Business 1792-1942* (New York: Bobbs-Merrill Co.), 1942, p. 304.
[2]*Ibid.*

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his negligent acts. Furthermore, the victim is sometimes dishonest; in some states the injured seem to have more interest in publicity than in recovering his losses. In fact, there is an increasing number of people—popularly called the "injury industry"—who derive satisfaction and money from playing on jury sympathies and capitalizing on malingering. The insurance industry has its problems with public liability too; casualty underwriters have the split responsibility of settling claims to the satisfaction of the consumer, the stockholder, and society.

Many states have attempted to deal with the problems of automobile liability both through administration and legislation. The remainder of this paper will consider ways in which the doctrine of fault has been modified and, in some cases, "softened" to better reflect the changing relationship between the negligent driver and the injured party.

Financial Responsibility Legislation

Financial responsibility legislation differs in various state laws, but all statutes covering financial responsibility at least attempt to resolve the problem of collecting from a negligent driver. There are three main versions of financial responsibility legislation: 1) proof of financial responsibility; 2) guarantee of security; and 3) compulsory responsibility.

Proof of financial responsibility laws exist in most states and their primary purpose is to encourage drivers to be responsible for any claim arising *after the first accident.* After having once been found a negligent driver, an applicant must prove to the court that he would be able to meet future financial costs arising from his negligence. The legislation is reminiscent of the legal phrase "doctrine of scienter" where, if it can be proven that an owner had knowledge of his animal's previous viciousness, he then has the responsibility of that knowledge. In terms of automobile legislation, one accident of a certain magnitude (usually $50 unless personal injury is involved) is considered sufficient evidence to invoke the financial responsibility law.

Guarantee of security legislation is very similar, except that the negligent driver is also held responsible for financial costs sustained in the initial accident.

The most stringent legislation is that known as compulsory liability. In states where this legislation prevails—Massachusetts, New York and North Carolina—the driver must establish his financial position before obtaining license plates. This legislation was first passed in 1927 (in Massachusetts), but it has not gained any real support in most states. Insurance companies, among others, oppose this type of legislation because it: 1) covers only bodily injury; 2) does not provide any way to hold out-of-state drivers responsible; 3) covers only the driver of the automobile; and 4) precludes insurance companies from selecting their own risks.

All three types of legislation are based on the doctrine of fault, and they recognize the fact that many motorists do not voluntarily meet their financial claims. Unfortunately, these laws have not been successful in coping with many problems of financial responsibility; in many states additional legislation has been passed or insurance companies have stepped forward to provide insurance coverage which protects the injured party from a financially irresponsible driver.

Additional Insurance Plans

Although there are many insurance plans that provide additional coverage to the public, the most important ones are: 1) the unsatisfied judgement plan; 2) the uninsured motorist plan; 3) the assigned risk plan; and 4) automobile compensation. Under the unsatisfied judgement plan, an injured party may collect financial damages from a state-established fund if he is unable to collect from the negligent driver. He must first obtain a judgement against the driver, and limits are set on the total amount collectible from the state. The state, in turn, takes subrogation (legal action) against the offending motorist. Maryland, North Dakota, New Jersey and the Canadian province of Manitoba, all have an unsatisfied judgement plan; the funds paid to injured parties are derived from insurance company assessments, interest on claims, and fees imposed upon uninsured motorists.

The uninsured motorist plan is similar, except that it was initiated by insurance companies rather than by legislation. By paying a modest premium, a driver can incorporate an "Uninsured-Motorist Endorsement" in his regular automobile liability policy. This endorsement al-

lows him to collect from his own insurance company if he is unable to collect damages from an uninsured motorist. Again, however, the injured party must establish his claim under the law of negligency; he must also prove that he did not contribute to the negligent act and that the damages claimed are accurate.

Another supplemental program, the assigned risk plan, provides liability coverage for those who are unable to acquire insurance through the normal channels. Although it is a state-administered plan, each insurance company must contribute to the state pool; the amount contributed is based on a percentage of the standard auto premiums which a particular company writes in the state. If a judgement is rendered against one of the poor-risk drivers, the claim is paid—up to the limit of his policy—by the company to whom that risk was assigned.

All of the aforementioned plans—unsatisified judgement, uninsured motorist and assigned risk plans—are based on the doctrine of fault. If a party was injured as a result of some "fault" of another, the injured party is compensated for that fault. They all attempt to "soften" the doctrine of fault—by expanding coverage, in one way or another, to those who do not qualify for insurance or who fail to acquire insurance; again, however, proof that some other party has been negligent is mandatory before the injured party can collect damages under any of these plans. The last group of plans to be discussed here, the automobile compensation plans, attack this basic premise and would pay the injured party without regard to fault. There have been a number of proposals (the most famous being the Keeton-O'Connell Plan) calling for automobile compensation, but basically all of these plans suggest that a program similar to Workmen's Compensation be applied to automobile liability. The merits and disadvantages of these proposals have been discussed widely in journals, newspapers, committee meetings and before legislatures. Proponents argue that an automobile compensation program would: 1) reduce court costs and delays; 2) eliminate the discrepancies in settling similar claims; and 3) reduce insurance costs. More philosophically, these proposals would allegedly recognize the nature of an industrialized society: the automobile is a necessity in an advanced society such as ours and therefore the social problems arising out of its use should be borne by society as a whole. Furthermore, it is argued that some injuries occur as a result of technological failures; these should be paid for without regard to fault.

The opponents are equally vocal. They maintain that automobile compensation would be more costly, would create interstate problems unless all states had a uniform plan—which is unlikely, would be unconstitutional in those states that impose limitations on the amounts recoverable for an injury and would not reduce court congestion because the right to sue still prevails under most compensation plans. Because there is no consensus of opinion regarding compensation plans, the states have been reluctant to adopt them.

All of these plans presume that one party has been negligent and therefore must bear "complete responsibility" and the resulting liability for his actions. This is even true of automobile compensation plans though they do not require a substantiation of negligence before a claim can be paid. But what of the case where there are extenuating circumstances? Concurrently with the development of supplemental insurance plans there has developed an awareness that automobile liability is not necessarily represented by black and white—guilty or not guilty. Rather, there are degrees of negligence, and a driver may be totally guilty of a negligent act or he may simply have contributed to the negligence that resulted in an accident. Consequently, the doctrine of contributory negligence is being used more frequently in trying to unravel automobile liability cases. For example, some state legislatures have recognized that a very minor negligent act precludes compensation under a literal interpretation of the law; to avoid this, legislatures have introduced the philosophy of comparative negligence, the intent being to prorate claim costs according to the proportion of negligence. Though comparative negligence involves a very simple principle—pay to the extent that you were at fault—it is impossible to practically determine the percentage figure which measures the degree of negligence. For this reason, no state has been able to successfully administer the concept of comparative negligence.

Conclusions

Over the years the automobile has taken an increasing number of lives; statistics showing the number of injured, medical costs, property damages mount each year. In short, the automobile accident represents a very important social cost. Both free enterprise and government are trying to find answers to these social problems and their related costs.

Naturally, the first attempt was to examine the laws for guiding principles in determining who should bear the costs of automobile accidents. Thus, the doctrine of fault was quickly adapted to automobile liability. Unfortunately, however, the punishment prescribed by the doctrine of fault does not always seem to fit the circumstances inherent in automobile liability. As a result, supplemental insurance plans have been promoted, along with an attempt to introduce the doctrine of contributory negligence into the area of automobile liability.

None of these programs have attacked the real problems of the accident victim. They all do nothing more than reassign the cost of the accident from one person to another or from a person to a company. The total cost to society is the same except that the burden may be less for the insurance company than for the individual. These plans and doctrines treat only the symptoms and not the basic effect of accident frequency and severity. Nonetheless, the doctrine of fault, the plans which modify its impact, as well as supplemental insurance coverage, often serve to transfer the loss to those best able to pay for it, in effect, it is better than nothing.

HUGH D. GALUSHA JR.

The Mythology of Community Development

Community development is a challenge; success depends upon effective planning in response to the needs of the citizenry

There must be a better way to bring about economic development than the ways practiced by most communities. This is a mixture of personal and professional conviction that I think I share with many people.

Saul Alinsky has said the place to start is the way things are. Alas, we almost never do. The American dream of a beckoning horizon has been a powerful stimulant, administered indiscriminately with cries of think big! It was important to the physical expansion of this country. If a man didn't like the town where he happened to be, he could go and start one of his own at the end of the railroad. There was physical room, there was economic room, there was cultural room to accommodate all.

Waste of space in any of the three senses was not important because the garbage didn't get in anyone's way. Whether the waste appeared as an abandoned townsite with rotting buildings like those that still dot the northern great plains, the loss of capital and energy in the enterprises that failed, or the broken dreams of the homesteaders and their town counterparts didn't really matter very much in the great upswelling of exuberance that propelled people across the United States.

Without the spirit the country might not have been settled as fast, nor would its initial development have been assured. It may well have been essential to have a blind irrational commitment to random growth. The worst of the excesses were ultimately cured when society started to catch up, and, by filling in the gaps in the structure of our laws, we have attempted in a very rough way to direct the course of resource use—or at least to determine what those uses will not be.

But the dream still persists. John Smith, the owner of a hardware store and twenty vacant lots in Any-City, Montana, like his peers in Anywhere, Mississippi or Vermont, still dreams of U. S. Steel, General Motors, and General Electric Industries all coming to town at once, his store alive with new, well-heeled customers who will underwrite the subdivision of his lots. It is not likely to happen. It is not impossible, but the probability is of the order of .00001%. And for good reasons—reasons about equally divided between the large industrial corporation, for example, and Any-City.

Even communities with as large a spectrum of services as the Twin Cities find growth from the outside frustratingly unpredictable. For there are simply not enough major U. S. industries looking around for new plant locations to

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satisfy more than the remote probability I have assigned. Even if Any-City is the theoretical best location for Company A, the cost of finding Company A and then convincing its decision-makers, makes the exercise a terribly complicated one. Besides, the record of even major corporate management in unfailingly making the right decision in plant location is less than reassuring. Whims and personal objectives do play their part as do time and chance.

Supporting dreams of improbable growth are two others that seem opposite to each other, yet serve to mutually reinforce the central theme of a limitless horizon. The first of these involves a conviction that in some vague way there is a conspiracy which is directed against Any-City, which, like the key log that holds the log jam, can be dislodged and release the pent-up desires of everyone to settle there.

The conspiracy syndrome in its broadest form is directed against the whole federal establishment from Congress to the Supreme Court; but it can also find scapegoats in the banking industry, the next town, the "Company" (by which is meant the principal corporate employer of the area, and the object of a love-hate that even Freud would be helpless to explain), tight money—in fact, only the imagination of the chairman of the unsuccessful industrial development committee limits the list. "If only *they* weren't against us!" is the cry which identifies a sufferer from this affliction.

The second supporting dream is a curious perversion of traditional American independence. This, too, has its identifying cry—the hit song of a musical of a few years back put it very well—"Anything you can do, I can do better." Unfortunately, in its sweeping application to our subject, it isn't quite true. Why not? The first reason stems from the extremely complicated society in which we now find ourselves living. I share the frustration of many that I must consult with experts in the various fields of my involvement. It is time-consuming, and, worse, they sometimes are impelled to tell me, respectfully but firmly, that I'm wrong—that irrespective of the quality of my motives, my idea simply will not work. I take their expert advice grudgingly most of the time; the times I don't, I nearly always regret. And for good reason.

In community planning it is not enough to be concerned, to desire a result; we have to know how to accomplish it. Education, public and private finance, city planning—these are areas where technicians can be enormously useful. And they are available. State universities, public agencies, the major utility systems, have literature and people to help solve the technical problems of growth.

Certainly there must be motive power which only a concerned group of community leaders can supply, but they need not try to invent the wheel, to use an apt, if trite, phrase. Success as a businessman or in a profession is not a freely transferable quality outside the immediate areas of that success. To the contrary. It is a sad commentary, perhaps, on the requirements of our society that the successful commitment of energy to a job, a practice, or a business required today usually results in a narrowing of skills rather than a widening. The unfortunate fact is that community development aspirations need specialists; even after a community determines what it wants and attaches price tags and priorities, it still needs technicians to carry them out. Fortunately, specialists are available, but curiously they often have to specially plead to get their services used.

The other manifestation of this dream is the assumption that every community has an equal potential for growth in identical ways. This is not so. Obviously there are the physical environmental differences—rivers, harbors, mountains, and plains. Less obvious, but still part of the physical environment, are the alterations caused by the occupation of man; the recognized limits of underground water reserves, pollution, and the patterns of exploitation of the natural resources in the trade territory. Least obvious, but as difficult to overcome as the other, are the differences in social structures and relationships. There are critical masses in economic growth, for example, which once attained by a community, tend to sustain continued growth without special directed efforts. The lead time of such a community is very difficult to overcome or even match.

Ninety-one principal urban areas have been identified for study in the Ninth Federal Reserve District (Montana, South Dakota, North Dakota, Minnesota, Northern Wisconsin, and the Upper Peninsula of Michigan) in the Upper Midwest economic studies conducted by the Up-

per Midwest Research and Development Council. In a soon-to-be published updating of the original reports, Dr. John Borchert has analyzed the changes during the first six years of the sixties. Here are some of his remarks.

> Twenty-two of these ninety-one have accounted for 97 percent of the growth. The Twin Cities metropolitan area, with 24 percent of the District's population, accounted for 70 percent of the growth of the urban areas studied. The data point to a continuing and accelerated concentration of the region's population in a small number of major urban areas. The trend had been running for three to four decades at the time of the 1960 Census. UMES urban projections indicated that it would run even faster between 1960 and 1975; and thus far, this is what appears to be happening.
>
> The reasons for this increasingly selective growth pattern are suggested by the functions which the fast-growth centers perform in the economy. The Twin Cities not only provide metropolitan services to the region, but also occupy a place in both the national economy and the popular image as one of America's major thriving cities. Of the other twenty-one fast-growth areas, fifteen have state colleges or universities. Three of those also have major military installations; and a sixteenth is a state capital. The few fast-growth places which do not have these substantial educational or other functions lie mainly in the southeastern part of the region, where most of the current and historical industrial growth is concentrated.

This illustrates my analogy of a critical mass. It does appear that a pattern of growth, once established at a certain rate, tends to be a competitive factor in favor of that fortunate community. And this is particularly true, I suspect, if the growth has been sufficiently diversified to bring along a pool of entrepreneurs or risk-takers of increasing sophistication, plus a supply of the essential support services and skills—progressive banks, tax attorneys, some scientific and engineering experts, and the rest of the infrastructure of a balanced community.

For Community A to look at Community B and assume that, because they may be comparable in certain superficial ways, such as population size at a moment in time, they can be comparable in all ways, is a dangerous assumption. Communities are synergistic systems, to quote Buckminster Fuller: the total community is often a much different thing than the sum of its parts. Limits imposed by history, custom, and use can confine development just as certainly as rivers, shores, and mountains. The Twin Cities metropolitan area, for example, comprises some 107 incorporated communities; many of these are peripheral towns that have gradually become bedroom enclaves where the possibilities of developing a balanced spectrum of community life are virtually nil. By taste, place of occupation, and interest, the inhabitants have little identification with their particular suburban community. There are only a limited number of things within the normal range of community interest holding them together, apart from the accident of residence within the incorporated limits of a legally denominated community. With the exception of a desire for good schools, these binding factors are usually negatives: not wanting high taxes, minority people, or smokestacks; not knowing who their mayor is or even what form of government their community has.

Can any pattern of internally organized community effort alter the roles of most of these communities where the population mix is so heavily weighted toward the commuter, and the pattern of land use has become frozen? The odds are against it happening. This does not mean such a community will not grow in population; much less does it mean there should be any lessening of efforts to shape the future development of the community. But the options are of an entirely different order than those of a community not physically tributary to a major metropolitan center.

Although of a different order, the options are not much broader for the small town out in the district that is attempting to compete on an equal basis with a fully developed shopping center. The fact that a broad range of community activities and support services is available in the large center tends to pull people into Fargo, for example, from many miles away—or Billings, Montana, to cite another. Medical services, homes for the aged, a range of entertainment services, and so forth, are service magnets to draw people who then, while they are in the community avail themselves of other community facilities, almost on an impulse basis.

But this it not always enough to allow firm predictions that such a center will grow. Small businesses everywhere are declining in number, and the decline is as rapid in the large cities as

in the hamlets. The only difference is that the hamlet can less afford the loss. A good example is provided by Dr. Borchert in his analysis of the change in number of business establishments by type of trade center. The loss between 1961 and 1967 throughout the Upper Midwest has been fairly uniform. While it varies in modest ways by category of activity, there has been a significant reduction in numbers wherever located. This suggests perhaps that a small community, instead of attempting to compete on all categories with the large competitor, should consciously elect to concentrate in a certain area of service.

An example would be a local health center, with a home for senior citizens and associated medical services. There are retail businesses that have established service reputations so effectively that people travel considerable distances to shop, even though the community may have little else to offer.

One community of this sort that comes to my mind is Rudyard, Montana, where in a town of only a few hundred, an enterprising merchant has built a service center for rural customers which is effective in drawing people from considerable distances, even though they have as alternatives Havre, which is many times larger, or Great Falls, which is classed as a metro center.

During a question-and-answer period following a panel discussion at the institute conducted by the bankers associations of Minnesota and the Dakotas on the Morris campus last year for small town bankers, the discussion had been devoted to the banker's role in community development. A banker from a small town in western Minnesota said, "Mr. Galusha, I've been here for a week listening to people tell me how I should run my bank and lead my community. I'm going to go to my office Monday morning a very confused and tired man. The first question I'm going to ask myself is 'Where and how do I start this new life?' "

I don't recall the answer I gave him. I suspect it was designed more to comfort him than to inform him. A year later, this is my answer: I quoted Saul Alinsky a few minutes ago, who said the place to start is the way things are. It's a most useful phrase to remember. What are the realistic possibilities for growth of Any-City? This does not mean generalizations for the next town, but specifically for Any-City.

Given the resources—human, financial, and physical—what are the aspirations of the community; how can one even be sure what his own are for the town? People and communities should attempt to respond to their environment in terms of what they *know* is true, rather than what they want to believe. How few communities really have a very clear idea of what the citizenry want; even fewer have much of an idea of what their attainable alternatives are.

And almost none have thought realistically about the price tags—the cost/benefit ratio of community action or inaction. Yet this kind of three-stage inquiry is essential for all communities, whether they be bedroom towns, rural communities, or metropolitan centers. The inquiry has to be internally generated. There have been speakers beyond counting exhorting chambers of commerce up and down the land about "progress starts at home," who then leave on the next plane to arrive at their homes in time to attend a chamber dinner at which a similar message is delivered.

Generally, the results are identical in both communities: a resolution espousing the principle, and a contribution of cash to the industrial development committee to finance a trip to another city where an attempt is to be made to proselyte one of their industries. Seldom is there any discussion of the central issue: What kind of a community do we have now; and what is reasonably possible for it to become? This issue involves a probing of the spirit of the community to find out just how committed people are to living there anyway. The bald fact is that if young people are moving out, it just may be this is related to why others are not moving in. It may be that the failure of spirit is contagious.

In its initial stages, the inquiry has to be kept as far-ranging as is possible. Not all that many people in any community articulate about their hopes for their town. It is much easier, especially in formal groups, to be negative and consume the meeting time with resolutions against federal spending and international bankers, neither of which accomplish anything, but make those in attendance feel they have accomplished something.

It really takes only one man to start, but if

that one is missing, no external effort will be successful, no matter how much money is shipped in from outside. It's a pity—for once begun, it's not too difficult to develop a discussion to a point where the options begin to emerge. It may be that some of the community aspirations have to be ruled out, however attractive they may have been, for one or more of the reasons mentioned earlier. Like building plans that had to be scaled down during the design stage when the reconciliation of dreams and dollars became impossible, a cutback on the scope of community planning before community commitment can be accomplished with no greater cost than an abandoned draft—even though the piteous cries of the proponents of the abandoned plan are heartrending, indeed.

I mentioned the word "spirit." One of the most dangerous myths is that an increased industrial payroll can solve everything; that community development can be measured solely by smokestacks. "You get us the industry and we'll worry about the rest," was the statement I once heard from a developer. He ignored the fact that it had taken about $11,000,000 of public and private money to repair the damages of unplanned growth of another era in that same city. The quality of life in a particular city is the ultimate yardstick used by young people in deciding whether to stay or leave, or by the businessman who is looking for a place to grow—not only as the head of a business, but as the head of a family as well. This is an intangible: the feeling in some cities of vitality, concern for individuals, a pride in being there. It is manifest in a number of ways: by informed courteous gas station attendants; good schools; clean streets; little league baseball; a symphony orchestra; good race relations.

To adopt the appealing shorthand of Charlie Brown: "Cities are for living." Economic growth must support and be consistent with this objective. We are at the end of an era of unrestricted, unplanned industrial growth that gave little regard to the humanistic values of the quality of life accompanying that growth. There are too many economic options for most Americans. Exhortation and community loyalty will not keep a young person in a town where he finds the quality of life deficient.

Those who talk wistfully to high school and college graduating classes of the American agrarian tradition, of the charms and pleasures of the quiet life in rural America and the small town, may be pleasing themselves and a few of their generation with their nostalgic yearnings for a less complicated world, but for most of their audience it is part of the dialogue of the deaf. About all that can be said for such a subject is that it won't get the speaker into any trouble, which is more than can be said for topics such as fiscal restraint, tax increases, Vietnam, and the whole range of urban, social, and economic topics lumped loosely together under the heading of urban crisis.

Crisis is a bad word, incidentally; perhaps it, too, should be listed among the myths, for it connotes a single point in time, a few easily definable causes that can be cured for all time with massive applications of money and federal programs. We must recognize the fallacy in this. Cities are constantly evolving, and it is with the accommodation of change and the acceleration of its rate we must be concerned.

And in many communities this concern is emerging. The most encouraging part of this phenomenon is that it no longer is narrowly defined in terms of raw industrial data. How people live, the number of options they have for housing, jobs, recreation, education, is the direction of inquiry by businessmen as well as college professors.

Unfortunately one does not find this concern in every city. I submit that here is the true correlation with economic growth. How broadly ranging is the internal injury? Who, and how many, are involved?

It has always been fashionable in the United States to attribute our national failures to national leadership. For most of us, this eliminates any individual responsibility because we are a long way from what we imagine to be the national decision-making level on which the objects of our criticism operate. There have been blunders in national policy which can be laid to errors of judgment of just a few men at these rarified levels, but the failures of leadership at the state and local levels are not only more numerous, but in the aggregate more serious.

Paradoxically some say that while centralization has shifted the focus of power to change the quality of American life far away from the individual to a few locations in Washington or New York, in reality urbanization is working the op-

posite effect. I suspect we are witnessing the emergence of city states almost like ancient Greece. Anyone who is engaged in regional efforts is well aware occasionally to his sorrow, of the rivalries and the sense of identity the metro areas are developing.

I wonder often about the future role of states in an urban society. I'm not suggesting their demise as political units, but I suspect their roles may be far different than they are now. The sense of identity, the political creativity, that is developing internally within cities is working profound changes in the political structure of the United States. The role of the Federal Government is being subjected to the same competitive strain, and for the same reasons.

Political, social, and economic action can take place at home in Any-City, and the chance to participate in the decision-making is as close as Main Street. It will be interesting to observe over the next few years what quality and quantity of leadership emerges, for here will be the testing of our national survival, I suspect; not Washington. It will not all be the largest cities either. The twenty-two cities in this District that accounted for 97% of the growth, as I mentioned earlier, are of various sizes and each subregion is represented. No, the race is not closed, but the ground rules for entry are defined: a sense of reality, a feeling of concern, a conviction that something can be done.

GLENN R. BARTH
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Utilization of Montana's Junked Automobiles: An Economic Analysis

Valuable scrap from derelict autos—is it feasible?

Over six million automobiles are junked in the United States each year and of these a great number never re-enter the steel-making process as scrap material, but are left as derelicts in an auto wrecking yard or abandoned in some other manner. This swift accumulation of derelict autos has reached a crisis level, and no wholly satisfactory solutions have been found, particularly for certain areas of the West such as Montana.

Frequent articles in the press describing gigantic new machines for the conversion of junked automobiles into valuable scrap iron might lead one to believe the solution to Montana's junked automobile problem may be near at hand. A thorough analysis of the processes and costs involved, however, argue convincingly against this solution.

The scrap auto disposal problem assumes gigantic proportions nationwide. Estimates of the total number of worn-out or wrecked automobiles scattered throughout the United States vary, but even the minimum estimtaes are staggering. An official of the Union Carbide Corporation has estimated that approximately 20 to 30 million auto bodies are strewn about the country.[1] Other sources place the number at upwards of 30 million, and as high as 40 million.

The collection grows every year because, although we wear out or otherwise remove from the highways about six-million autos per year, the Los Angeles Times estimated in 1966 that less than half of them make their way through the scrap cycle back into steel furnaces. Worse still, the number of autos retired from service each year is greater than that of the preceding year—from an estimated 3.6 million cars scrapped in this country in 1958 to 5.3 million in 1963, and 6.6 million autos in 1966. And obviously the number of autos scrapped will keep

[1]A. L. Hodge, "Will Melting Scrap be the Next Expansion in Scrap Processing?" *Waste Trade Journal*, Vol. 26, No. 9 (February 26, 1966), p. 13.

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increasing year after year, since motor vehicle scrappage totals in the past have grown as new car sales and registrations have grown.[2]

The derelict auto disposal problem is especially severe in the nation's cities. An outstanding example is provided by the city of New York, where statistics show that during 1960 approximately 2,500 autos were abandoned on the city streets, and removed by the Department of Sanitation; by 1962, the figures had increased to 6,299, and, in 1964, approximately 25,000 cars were abandoned on the New York City streets—at a cost to the city for removal and disposal in excess of $600,000.[3] The story is much the same in most other cities, large and small, throughout the country.

The nature of the problem in the rural areas differs from that in the cities in one major respect. The cities remove the abandoned hulks from the public roadways in order to maintain sanitation and the efficiency of the public thoroughfare system. In the countryside, the autos are most often abandoned in barrow pits, along rivers, in gulches and canyons, and in open fields. The rural problem, therefore, becomes one of maintaining the aesthetic values of the countryside, a problem with overtones of public apathy.

It is extremely difficult to obtain an accurate count of the derelict autos in an area the size of the state of Montana. The past president of the Montana Dismantlers Association has estimated there are about 50,000 auto bodies "lying around Montana." Of those, he estimated that approximately 75 percent were lying abandoned on public or private property other than in established auto dismantlers' yards. In addition, he expected about 30,000 more to be junked during the current year (1966).[4]

The conditions which create the national derelict auto disposal problem can be separated into three major considerations: (a) the pattern of automobile consumption in the United States, (b) the revolution in the methods of making steel in this country, and (c) the quality of the scrap iron and steel derived from autos, which in turn affects the scrap selling price.

The number of automobiles retired from service increases year after year. According to the Automobile Manufacturers Association, the average age of passenger cars retired from the highways in the United States is fairly stable—about 50 percent of a given year model will have disappeared at the end of about ten and one-half years. Thus, the number of automobiles scrapped during any given year is related to the number of autos coming into retirement age which were produced during previous years.

The most important of the conditions which cause the scrap auto disposal problem is undoubtedly the current revolution in steelmaking methods. The conventional and most widely used method of producing steel in the U.S. up until recent years has been the open-hearth furnace. In 1954, a revolutionary steel making process termed the "oxygen converter" or "basic oxygen furnace" (BOF) was introduced into this country from a process developed at a steel producing center at Linz, Austria—a process which presently accounts for over 25 percent of the steel made in the U.S., and probably will account for 50 percent by 1970.

The BOF can turn out a batch of steel in an hour or less, while the time required by an open-hearth furnace is six hours or more. Because of the faster operation, steel can be made by the BOF for two to eight dollars per ton less than with the open hearth.[5]

Steel is made from scrap steel and pig iron. The oxygen converter can consume not more than 30 percent scrap in the loading charge, while the open hearth charge generally consists of 35 to 50 percent scrap, and the furnace method can use as much as 60 percent. Since the BOF requires the least scrap, demand for the low grade types such as automobile scrap necessarily will drop.

The steel industry would rate home scrap, industrial scrap, and obsolete scrap in that order of desirability. Of the obsolete scrap, the demolition type is preferred, leaving old automobiles in the category of the least preferred scrap. Automobiles constitute a poor grade of scrap steel because they contain a wide variety of

[2]Institute of Scrap Iron and Steel, *Proceedings of the National Conference on Auto Salvage*, (October 1, 1964), p. B-6 (Addendum dated May, 1968) and p. E-2.

[3]*Ibid.*, pp. U-1, U-2.

[4]L. Capay, "Dismantlers Seek Burial Ground for Abandoned Bodies of Autos." *Missoula Sentinel*, January 5, 1966, p. 5.

[5]A. R. Darr, "Swing to Oxygen Furnaces Helped to Boost Basic Steel Capacity 6 million tons in 1965," *Wall Street Journal*, XIV, No. 51 (December 24, 1965).

nonmetallic impurities, such as plastic, rubber, and glass, as well as the more porious metallic impurities, such as copper, lead, and chromium, which are contaminants in the manufacture of steel.

As the demand for auto-body scrap has fallen, so has the price. The scrap processing industry will handle only the scrap that will yield a profit. The price has fallen to such a low level that in many instances it is no longer profitable to prepare autos for sale as scrap. Thus, at a time when the scrappage rate for old autos is at a peak and still rising, the demand and price for auto scrap is at its lowest.

The methods of disposing of worn-out or wrecked autos range from dumping or burying, to feeding them into a gargantuan shredder. It would seem most desirable from an economic standpoint to utilize the metals contained in old autos as scrap material in the production of new steel and other metals as is now being done with a portion of the auto hulks in the country. The organizations which perform the function of preparing scrap autos for purchase by the steel companies or their workers are called scrap processors. They are not auto dismantlers, whose business is the stripping of old cars for saleable parts. The auto dismantler, or wrecker, provides the raw material for the scrap processor's use.

After receipt of the auto body from a wrecker or other source, the processor prepares it for sale to a steel mill by stripping it of nonferrous materials and compressing it into a bale which usually includes the frame, undercarriage, and sheet steel. In Montana, the conventional auto scrapping systems have largely failed as a means for utilization of the auto bodies as scrap metal, principally because the price of the finished product—the bale—does not cover the labor cost for processing the bodies plus the freight cost for shipping the scrap to a steel mill.

In order to lower the cost and upgrade the product, several highly efficient auto scrapping processes have recently been developed which employ gigantic pieces of equipment capable of accepting a whole auto and shredding it into small chunks of nearly pure steel. The waste materials and nonferrous metals are automatically separated, and the steel emerges from the machine as a raw material ready for use by a steel producer.

Inside the shredding machine, the entire automobile is ripped and torn into small pieces so violently that the nonferrous metals, dirt, rubber, and other undesirable materials are knocked loose. The product is then fed into a rotating drum magnet which separates the ferrous particles from the nonmagnetic material which drops into a bin for storage and eventual removal. After magnetic separation the steel goes through a second cleaning and a final quality check; then it is dropped onto a conveyor for transfer to a railroad gondola car. The new shredders add value to the auto bodies by converting them to another material which is much more valuable on a unit weight basis. A Ford Motor Company official estimated that baled auto scrap was worth $20.00 to $25.00 per ton while shredded steel scrap was worth roughly $30.00 per ton.[6]

A list of shredder locations provided by the Institute of Scrap Iron and Steel shows that the shredders nearest to Montana are Spokane, Seattle, and Tacoma, Washington. Another is located at Portland, Oregon, and the nearest facility to the east is at Council Bluffs, Iowa. Because of their proximity to Montana, the locations in Seattle, Spokane, and Tacoma were used for the cost analysis described below. (Preliminary investigation of the rail freight rates indicate that the cost for shipping scrap from Billings to Council Bluffs would be at least 50 percent greater than for shipping from Billings to the West Coast.)

Cost analysis indicates that worn-out or wrecked autos in Montana can be most economically utilized by collecting them at selected locations within the state, and selling them to an auto body shredding facility. Cities and towns with large concentrations of auto bodies would be selected as operating locations. Scrap autos from these areas would be accumulated for shipping. When all the available hulks in the area were prepared, they would be shipped by rail or truck to a shredder facility for processing.

The number of locations selected should be adequate to assure that the major concentrations of auto bodies in the state can best be economic-

[6] "Ford Plans to Reuse Steel from 250,000 Junked Autos a Year," *Wall Street Journal*, XLVI (December 13, 1965), p. 6.

ally utilized. Too few locations could ignore some existing accumulations of auto bodies; too many locations could mean insufficient derelict autos in each location.

There is no reason to suppose that the operating costs at any location should vary greatly from the costs at other locations. However, the costs of shipping the car bodies from the operating locations to the shredding facility will vary according to freight rate costs. Three operating locations chosen to represent shipment from the eastern, central, and western areas of Montana were used in the cost analysis: Billings, Great Falls, and Missoula.

Shipment of the whole auto hulks is uneconomical because auto bodies displace a large volume and constitute a small mass. The density of an auto body is only three to four pounds per cubic foot. In the proposed disposal operation, a body would be prepared by flattening in a mobile auto crusher and reduced to a billet less than one-fourth of its original bulk. First auto hulks would be transported to the site from auto dismantlers' yards and other accumulations of hulks in the area serviced by the operating location. Individual hulks could also be brought to the site by private owners. Those autos which were not in a condition suitable for flattening would be prepared by removal of the undesirable parts before they were brought to the site. The radiator, battery, tires, seats, engine block, and gas tank, would ordinarily be removed before the auto body was flattened for shipment. The autos would be fed into the flattening machine and the billets would be removed from the machine, loaded onto a railroad car, and shipped to a shredding facility.

A cost analysis for the utilization of Montana's scrapped autos was divided into two major elements: (1) the cost of freight for shipping the auto scrap to the shredding facility, and (2) the costs of conducting all the other operations of the utilization method. The freight cost for shipment of the auto billets to the shredding facility was the first item considered in the cost analysis because it was judged to be the largest cost and the most important single factor in the proposed method.

The purpose of the cost analysis is to test the economic feasibility of the proposed utilization method. The costs derived for the various elements of operation are estimates based on the assumptions and "ground rules" presented in the analysis. The assumptions and ground rules were chosen to produce conservative (high) cost estimates, so that if the results of the analysis showed the proposed utilization method to be economically feasible, a high degree of confidence could be placed in the conclusion. Exceptions to the policy of conservatism occurred where the cost element under consideration was judged to be small and the choice of assumptions was limited to either assuming no cost or assuming a small cost on weak or vague substantiation. In such cases a "no cost" assumption was made.

Freight Costs. The cost of shipping the auto billets to the shredding facility were found to vary depending upon the point or origin of the shipment and whether shipment was made by rail or truck. Where auto billets to be shipped to the shredder by rail are loaded on end in a gondola car, it is calculated that about 52 billets could be accommodated. The railroad freight rates and shipping cost for all the shipping combinations are shown in Table 1.[7]

TABLE 1

RAIL SHIPPING COSTS

For Auto Billets Shipped Between Various Combinations of Operating Locations and Shredder Locations

Shipping Combination	Minimum Carloading Required	Freight Rate (per 100 lb.)	Freight Cost (per carload)	Freight Cost (per ton of billet)
Billings-Spokane	100,000 lb.	74¢	$740.00	$15.80
Billings-Seattle	100,000 lb.	74¢	740.00	15.80
Billings-Tacoma	100,000 lb.	74¢	740.00	15.80
Great Falls-Spokane	80,000 lb.	69¢	646.00	13.80
Great Falls-Seattle	80,000 lb.	69¢	646.00	13.80
Great Falls-Tacoma	80,000 lb.	69¢	646.00	13.80
Missoula-Spokane	80,000 lb.	59¢	552.00	11.80
Missoula-Seattle	80,000 lb.	59¢	552.00	11.80
Missoula-Tacoma	80,000 lb.	59¢	552.00	11.80

Since the cost of freight from any one operating location to any of the three shredder locations is the same, only three basic rail shipping combinations affect the cost analysis, and they

[7]Freight rate data from Northern Pacific Coast Freight Bureau Authority, Freight Tariff 4-B.

are determined by the point of origin of the shipment.

Shipment by Motor Truck. As in the case of shipment by rail, shippers of steel scrap by truck are charged for a minimum weight of cargo, whether the loading weight is achieved or not. The minimum loading weight required for auto scrap would be 45,000 pounds.

A comparison of the rail shipping costs with the motor truck shipping costs showed the truck shipping costs to be from two to three times higher. Since shipment of the billets by truck would not be competitive with rail shipment, this data will be excluded from further consideration at this point in the analysis.

Operations Costs. The costs of the proposed utilization operations were analyzed separately in four categories: (1) acquisition of the auto bodies, (2) preparation of the autos for shipment, (3) indirect or overhead costs, and (4) return on investment.

The economic problem of scrap auto disposal is concerned primarily with disposing of existing auto accumulations and not with reaching out to collect scattered abandoned auto bodies. If junk autos had scrap value, those who now abandon old autos would be able to sell them to a scrap processor. The problem of the scattered, abandoned autos would then be largely minimized. So, for the purpose of cost analysis, acquisition or collection of the auto hulks was considered as a no-cost item, because they have a negative worth to an auto dismantler.

The cost of preparing autos for shipment was divided into two separate costs for analytical purposes: (1) the cost of purchasing or renting, and operating the required equipment, and (2) the labor costs. The costs associated with all the items of equipment were derived in terms of dollars per ton of flattened auto scrap.

The cost of the required hand tools would be so small compared to the cost of the major equipment items required for flattening and handling the scrap autos that the hand tool costs were ignored in the analysis of equipment costs.

Auto Flattener Costs. A survey of manufacturers revealed only two mobile machines capable of flattening an auto body into a billet which can be processed by an auto shredder. One machine is the Harris Carbasher II, manufactured by the Harris Press and Shear Corporation, Cordele, Georgia. The other machine is the Al-Jon Car Crusher, manufactured by the Al-Jon, Inc. Ottumwa, Iowa.

Either car flattening machine uses a fork lift end loader to load the hulk into it and to remove the finished billet. Since the Al-Jon Car Crusher offers a radio control device which can be operated from the crane or fork lift, making it possible for one man to operate both the fork lift and the Car Crusher, the analysis of the flattening machine cost was based on use of this machine.

Although both manufacturers were queried as to the possibility of leasing or renting their machines, their replies were presented in terms of purchase only. Since the manufacturers indicated by their terms that they would consider only outright sale of their machines, the cost was analyzed in terms of depreciation, expressed in dollars per ton of auto billet production.

The machine would be depreciated using the straight-line method, and the cost would be amortized over a five-year period. It was also assumed that the machine would be worn out at the end of that time, when its worth would become the salvage value based on the weight and the current price of that grade of steel scrap, a figure so small it was ignored in the cost analysis.

The cost of the rail freight would be amortized in five years and was considered as part of the purchase price for cost analysis. The purchase price of $30,780 amortized over a five-year period yields a depreciation expense of $6,156 per year.

The machine will flatten 15 autos per hour, or 120 autos in an eight-hour day. Production on a yearly basis would therefore be 120 autos/day x 5 days/week x 50 weeks/year = 30,000 autos/year. Al-Jon indicated in their inquiry response that operating costs for the Car Crusher should be calculated using an "efficiency factor" of 60 percent of total capacity. (An efficiency factor is commonly used in computation of machine production to allow for contingencies such as "down time" for repairs and maintenance, training of operators, moving of machinery to a new location, operator absenteeism, inclement weather, and others.) When the 60 percent efficiency factor is applied, the yearly production becomes 18,000 autos per year. The average auto, less engine, and ready for flattening, weighs approximately 1,800 pounds. The

production can therefore be expressed as 18,000 autos/years x 1,800 lbs./auto, or 32,400,000 lbs./year. The production is equivalent to 16,200 tons per year. The cost of the machine on a unit-ton basis is therefore the annual depreciation expense of $6,156 divided by the yearly production of 16,200 tons or $.38 per ton of billet production.

The fork lift truck required for feeding the auto flattener and removing the billets is a common item of equipment that can be rented. The rental cost is included in the operating cost estimate provided by Al-Jon for the Car Crusher. The Al-Jon estimate of operating cost for the Car Crusher includes fuel, maintenance, and wages for one full-time operator, also. The total operating cost which includes all the items listed is estimated by Al-Jon to be $2.00 per ton of production. The estimate is based on operation at 60 percent of total capacity.

When the disposal operations were moved from one operating location to another, the fork lift truck would also be moved. Such a vehicle is not designed for long distance highway travel, it would therefore be hauled from one location to another by a commercial hauler.

Consider a typical move, say from Billings to Bozeman, the distance of approximately 142 miles. A price quotation for hauling a fork lift truck from a hauling company in Missoula came to $1.25 per "loaded mile" for any distance up to 150 miles. The cost of hauling the fork lift truck between Billings and Bozeman would therefore amount to approximately 142 miles x $1.25/mile, or approximately $178.00. The hauling cost in dollars per ton of auto billets would vary with the tonnage of billets produced at any one location, and would decrease as tonnage increased.

The Car Crusher is mobile, and may be towed from one operating location to another by a standard truck tractor. A rate of $1.50 per "loaded mile" was quoted by a heavy equipment hauling company in Missoula for towing the Car Crusher. The cost for transfer between Billings and Bozeman would therefore be about 142 miles x $1.50/mile or approximately $213.00, and again the transfer cost in dollars per ton of auto billets would vary with the tonnage of billets produced at any one location.

As previously described, auto dismantlers have been bearing the cost of removing unwanted hulks from their yards, and disposing of them by burial. The practice of disposal by burial has been accepted by the dismantlers as one of the costs of doing business. Although the dismantlers would still incur the cost of transporting hulks from their property to the disposal site, they would save the cost of burying them. The cost analysis assumes that the auto dismantler and others who wish to get rid of derelict autos will haul the hulks to the auto flattening site at their own expense and therefore, this was not considered to be a cost in the proposed utilization method.

The last major item of equipment needed is a crane for loading the auto billets into the railroad gondola car—also an item of equipment which can be rented or leased. A book on rental rates for construction equipment shows a rental cost of $1,065 per month for a suitable crane. The machine chosen for cost analysis is gasoline powered and truck mounted so as to eliminate the need for additional transporting equipment. It has a maximum lifting capacity of 12½ tons. A general purpose clamshell bucket attachment would cost an additional $282.00 per month, making a total rental cost of the crane and bucket of $1,347.00 per month.

If the crane loads the billets into the railroad car at the same rate as the flattener, (a rate of production of 16,200 tons per year, equivalent to 1,350 tons per month), the cost of the crane rental in dollars per ton of loaded auto billets is $1,347 per month divided by 1,350 tons, or approximately $1.00 per ton.

In addition to the rental cost, other operating costs for the crane were considered. Fuel, maintenance, repairs, and the cost of transferring the crane from one operating location to the other are the major items. Fuel cost for an hour of crane operation was estimated to be 4 gallons/hour x 30¢/gallon, or $1.20. The previously estimated rail car loading rate of 1,350 tons per month is equivalent to 7.8 tons per hour. The fuel cost per ton of loaded auto billets is therefore $1.20 divided by 7.8 tons, or approximately $.15 per ton. The cost of maintenance and repairs to the crane are considered in the evaluation of the equipment cost analysis. The costs of moving the crane in a typical move from Billings to Bozeman were estimated to be approximately $8.40, a cost so small compared to other operating expenses that it was ignored in the cost analysis.

The cost of equipment for operation of the proposed auto body utilization method is summarized in Table 2, which shows the costs for various items of equipment in terms of dollars per ton of auto billets loaded on a railroad car.

TABLE 2

EQUIPMENT AND OPERATING COST*

Dollars Per Ton

Equipment Item	Tons of Auto Billets (loaded on rail car) 200	400	600	800	1000	1200
Auto flattner (purchase costs)	.38	.38	.38	.38	.38	.38
Fork lift rental (includes operation of flattener and fork lift)	2.00	2.00	2.00	2.00	2.00	2.00
Towing of flattener	1.07	.53	.36	.27	.21	.18
Transporting fork lift	.89	.45	.30	.22	.18	.15
Crane rental	1.00	1.00	1.00	1.00	1.00	1.00
Crane fuel	.15	.15	.15	.15	.15	.15
Total Equipment Cost	5.49	4.51	4.19	4.02	3.92	3.86

*Note that some cost items are constant on a unit ton of production basis, while other items decrease per unit ton as production increases. The costs which remain the same on a unit ton basis do so because the operations are paced by the output of the auto flattener, operating at 60 percent of maximum rated capacity. The cost of towing the flattener and transporting the fork lift occur only once at each location, and the cost per ton decreases as production at any operating location increases.

The cost of labor required for operation of the proposed utilization method was analyzed in terms of the level of manpower required.

a. One man to operate the fork lift. The same man would operate the flattening machine by remote radio control.

b. A crane operator and an oiler would be required to load the auto billets onto the rail car with the crane.

c. Some undetermined level of manpower to prepare the cars for flattening by removing undesirable parts.

It was noted earlier that the estimate of $2.00 per ton for running the flattening machine included the wages of the fork lift driver, and is not, therefore, added to the other labor costs.

The current agreement between the Montana Contractor's Association and the International Union of Operating Engineers stipulates that an oiler is required in addition to the operator when a clamshell or any other attachment is used with a crane. The union pay scale for a crane operator is $4.98 per hour, and the rate for an oiler-driver is $4.42 per hour. The total hourly cost of labor for operating the crane would therefore be $9.40 per hour, or $75.20 for an eight-hour day. At the previously estimated production rate of 64.8 tons of auto billet per day, the labor cost for crane operation would be approximately $1.16 per ton of auto billet produced.

There is a good basis for eliminating the cost of stripping the auto hulks as a cost element in the analysis of the proposed disposal method. The only parts which the dismantler does not separate from the auto hulks in the normal operation of his business are the seats and fuel tank, and the advantage of free disposal of the hulks would probably more than compensate for the slight additional cost of removing the seats and fuel tanks. Therefore, it was assumed that the hulks will have been stripped of all the undesirable components by the dismantler.

Only the major—identifiable items of indirect cost were considered in the cost analysis. The major cost items are identified as salary for management, the employer's contribution for Old Age and Survivor's Insurance (O.A.S.I.) estimated at about $.08 per ton of billet production for four employees and a manager, and the employer's payment for Workmen's Compensation Insurance premiums. The cost of payments for Unemployment Compensation are comparatively minor (2.7 percent of the first $3,000 of wages), and were ignored in the cost analysis.

The employer's payments for Workmen's Compensation Insurance for the type of work under consideration would cost approximately $5.00 per $100.00 of wages (rate obtained from Glacier General Assurance Company, Missoula, Montana, August 23, 1968). The direct labor cost for the fork lift operator was calculated to be approximately $.57 per ton of auto billet production, and the combined labor cost for the crane operators was calculated to be approximately $1.16 per ton. The approximate cost of Workmen's Compensation would be five percent of $1.73 or $.09 per ton of auto billet.

The major item of indirect or overhead cost would be salary for the project manager who would direct the implementation of the proposed utilization method. The manager would be required to perform a wide variety of organizational and supervisory tasks. He would be responsible for selecting the operating locations, obtaining authorization from auto dismantlers and others for preparation and shipments of the hulks, on-the-job supervision, arranging for shipment of slabs, and sale of the slabs to the shredding facility. It was assumed that a manager capable of performing all the required functions would be an experienced person who would require a minimum salary of $12,000 per year. At the production rate of 16,300 tons of auto slab per year, the overhead cost for management would be $.74 per ton of billet production.

The percentage of return that could reasonably be expected on an investment of the type under discussion cannot be determined exactly because of the many uncertainties involved, such as the future prices of shredded steel scrap, availability and accessibility of accumulations of auto hulks, and availability and cost of rented equipment and manpower. A high rate of return would therefore be vital on such a high-risk proposition. For purposes of analysis, this study assumed that a 20 percent annual rate of return would be required to attract an investor. Since the cost of the machinery would be completely amortized over its five-year working lifetime, the average amount of the investment during that time period would be one-half of the purchase price, including freight, or $15,390. The yearly return expected would then be 20 percent of $15,390 or $3,078. On a production basis of 16,200 tons of auto slabs per year, the cost of return on the investment would be approximately $.19 per ton.

The cost for equipment including all operating expenses except labor, were found to vary over a given range of auto billet production tonnages at any operating location. The total equipment cost per ton of prepared scrap would decrease as the tonnage produced increased.

Price Paid by the Shredder Facilities. The price paid for junk autos by the shredder facilities in three major cities varies considerably. The cities and their price quotations are as follows:

Spokane, Washington, $9.00 per ton

Seattle, Washington, $11.00 per ton

Tacoma, Washington, $14.50 per ton

The important fact that these figures point out, as stated earlier, is that *there is no cost-price combination which represents economic utilization of junk autos, because there is no case in which the market price of the auto scrap is adequate to cover the costs of production and shipping.*

The cost of shipping the scrap to a shredder facility by rail or truck is greater than the total of all the production costs. For shipments originating from Billings or Great Falls, the freight cost alone, for either rail or truck, is greater than the market value of the scrap. If the assumptions which were employed for development of the billet production cost analysis are well founded, it would be impossible to greatly reduce the cost of preparing the junk autos for shipment, short of finding a radically different method of flattening the hulks, or another form of preparation as yet unknown.

The factors which determine the rail and truck freight rates, however, are not so much the economic cost of shipping the material as they are consideration of how shipment of the general type of material (scrap steel) fits into the overall transportation picture for the applicable geographic area. The existing rail and motor truck freight rates do not necessarily represent the actual economic cost of transporting the commodities. The rates are in effect by virtue of their approval by the respective regulatory authorities. This is made evident by the fact that the cost of rail freight for shipping auto scrap from any of the operating locations in Montana to Spokane would be the same as for shipping to Seattle or Tacoma. Since the cost of freight is by far the greatest single cost item of the utilization method, it may be possible to reduce the rates—an absolute necessity if Montana's auto scrap were to be economically transported to the noted shredder facilities.

The Missoula-Tacoma combination would most closely approach the possible. For a production of 200 tons of billets at a single location, the total production cost would be $7.75 per ton, which when added to the rail freight of $11.80

per ton amounts to a total cost of $19.55 per ton. The purchase price paid by the shredder at Tacoma is $14.50 per ton, leaving presently a loss of $5.05 per ton. Or 1,200 tons of billets would cost $6.12 per ton to produce, and the freight cost and purchase price would bring the total cost to $17.92 per ton or a loss of $3.42 per ton.

If the rail freight rates were reduced by $5.05 per ton, a reduction of 43 percent, economic utilizations of junk auto accumulations in the Missoula area as small as 200 tons would be possible. Two hundred tons of billets represents about 220 junk autos, a quantity which could be found in most average-sized dismantler's yards. A rail freight rate reduction of $3.42 per ton, or about 29 percent, would make possible the economic utilization of any collection of derelicts in excess of 1,200 tons, or about 1,340 junk autos.

For an operating location at Billings, freight rate reductions of 57 percent and 46 percent would be required to allow profitable utilization of junk car tonnages of 200 and 1,200 tons, respectively. For economic utilization when operating at Great Falls, the corresponding rate reductions required would be 51 percent and 39 percent. And such freight reductions are most improbable.

The primary recommendation of this study is, therefore, that effort be continued in the direction of achieving a lowering of rail rates to a level which would allow future utilization of a much greater percentage of auto scrap than can be economically utilized now.

Auto body shredder facilities are being put into operation in the United States at an increasing rate. The current list supplied by the Institute of Scrap Iron and Steel shows a total of 65 shredders in operation or being planned as of May 1968. As the technology of designing shredder facilities becomes mature, it may become practical to develop portable or mobile units which could be moved from one accumulation of hulks to another. The advantage would lie in the fact that it would be more economical to ship the shredded material than whole hulks or billets because the density of the shredded scrap is far greater, and maximum rail car loadings could be achieved. By the use of a portable shredder, junk car accumulations which are now too small or remote to be utilized could be economically processed. In the long run, therefore, the most hopeful development in sight is the feasibility of developing portable auto body shredders.

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